



Australian Bureau of Statistics

1364.0.15.003 - Modellers' Database, Dec 2005

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Summary

About this Release

Related to: 1364.0.15.001

The Modellers' Database consists of over 500 quarterly times series constructed from the NIF and TRYM econometric models. They are useful to economists, econometricians, financial analysts and students. The database covers national accounts, banking and investment, price indexes, interest rates, world data, population and labour statistics and wage and tax rates. Some of the time series are published elsewhere by ABS while others are specifically constructed for the TRYM and NIF models. For most series the data span is between 20 and 25 years.

See 1364.0.15.001.

Explanatory Notes

Time Series Spreadsheet (I-Note) - Time Series Spreadsheet

To Our Subscribers:

Following the introduction of new National Account benchmarks in the September quarter 2005 quality issues were identified with some of the National Income Forecasting (NIF) series in the Modellers' Database. This has resulted in a wider review of all NIF series. The review will investigate the models, assumptions and input data currently being used to create the NIF series.

Most NIF series have acceptable quality and the ABS will continue to release them regularly. The release of the remaining series will be determined on a case by case basis depending on the outcome of the review.

The following NIF Series will not have any data available for this quarter:

TABLE 2. NIF Demand And Expenditure - Seasonally Adjusted (\$ million)

Statistical Discrepancy (cvm)

TABLE 3. NIF Private Gross Fixed Capital Formation - Seasonally Adjusted (\$ million)

Plant & Equipment : Corporate

Plant & Equipment : Unincorporated

TABLE 4. NIF Depreciation & Deductions - Original (\$ million)
Corporate Trading Enterprises

TABLE 5. NIF Interest Payments - Seasonally Adjusted (\$ million)
Government : Total
Unincorporated Trading Enterprises
Corporate Trading Enterprises (Seasonally Adjusted)
Persons : Total excl dwellings (Seasonally Adjusted)

TABLE 7. NIF Stocks Of Physical And Financial Assets - Seasonally Adjusted (\$ million)
Total Capital Stock : Corporate
Other Building & Structures : Corporate
Plant & Equipment : Corporate
Corporate Sector Debt Capital (Original)
Total capital stock : Corporate (cvm)
Motor Vehicles (cvm)
Other Buuilding & Structures : Total (cvm)
Household Durables (cvm)
Plant & Equipment : Total (cvm)

TABLE 14. NIF Ratios - Seasonally Adjusted
Incomes : Dividends paid Overseas to YDPC\$
Building & Construction to Plant & Equipment by pfe

TABLE 15. NIF Taxes & Transfers - Seasonally Adjusted (\$ million)
Net Income Taxes Paid : Persons
Payroll Tax : Total
Sales Tax

TABLE 16. NIF Incomes - Seasonally Adjusted (\$ million)
Dwellings Rent Received by Persons
Transfers to Overseas

TABLE 17. NIF Budget Sector - Seasonally Adjusted (\$ million)
Company Tax Payments
Total Receipts
Subsidies

TABLE 19. NIF Miscellaneous - Seasonally Adjusted
Wage Share of GDP at Factor Cost (ratio)

We apologise for any inconvenience it may have caused you.

IDENTIFIER	DESCRIPTION	UNITS	DECIMAL	COMMENTS
Additions	See note below			
Deletions	All TRYM Experimental Industry Series			
Changes	There will be a total of 39 tables instead of 56 in the Modellers' database			

Note:				
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Additional TRYM Series

Table 22. TRYM Demand - Seasonally Adjusted (Chain Volume Measure)

DDM Market Demand : Dwelling Sector

DGM Market Demand : General Government

Table 23. TRYM Financial Sector - Seasonally Adjusted (Percent)

INF Long-Run Inflation Rate

INFX Target Inflation Rate

Table 24. TRYM Output & Expenditure - Seasonally Adjusted (Chain Volume Measure)

DISE Statistical Discrepancy in GDP(E)

DISEAD Chain-Volume Discrepancy in **GDP(E)**

DISEZ Statistical Discrepancy in GDP(E) (\$ million)

GDW Output of Dwelling Sector

GE Enterprise-Sector Output

GEA Rain-adjusted Enterprise-Sector Output

GENC Enterprise-Sector Non-Commodity Output

GERAIN Output Affected by Rain

GGN Output of General Government : Labour

Table 25. TRYM Investment - Seasonally Adjusted (Chain Volume Measure)

IB Private : Business

IE Enterprise Sector

Table 26. TRYM Capital Stock - Seasonally Adjusted (Chain Volume Measure)

KE Enterprise Sector

KSN Non-Commodity

Table 28. TRYM Labour Market & Demography - Seasonally Adjusted ('000)

NEE Employment : Enterprise sector

NEED Employment : Demand

Table 29. TRYM Prices - Seasonally Adjusted (Chain Volume Index)

PDDM Dwelling Sector Market Demand

PGDW Dwelling-Sector Output

PGE Enterprise-Sector Output

PGENC Non-Commodity Enterprise-Sector Output

PGGK General-Government Output : Capital

PGGN General-Government Output : Labour

PGNEAX Target price level

PIE Enterprise-Sector investment

PIEF Indicator Level : Enterprise-Sector investment

PKDE Depreciation of Enterprise-Sector Capital

PKE Enterprise-Sector Capital Stock

PKSFM Farm Stocks

PKSN Non-Farm Stocks

PSFM Farm Stock Building

PSTAR Short-Run Supply

Table 30. TRYM Dummy Variables & Time Trends (Number)

QTPCNR Time Trend : Price of Non-Rent Consumption

QTPIDWF Time Trend : Price of Dwelling Investment

QTPIEF Time Trend : Price of Enterprise-Sector Investment
QTPXNC Time Trend : Price of Non-Commodity Exports
QTWPXC Time Trend : World Price of Commodity Exports

Table 31. TRYM Rates (Percent)

NAIRU NAIRU

RKDE Depreciation Rate : Enterprise-Sector
RKDCVM Chain-Volume Discrepancy : Dwelling-Sector Capital
RKECVM Chain-Volume Discrepancy : Enterprise-Sector Capital
RKGCVN Chain-Volume Discrepancy : General-Government Capital
RTDDM Tax Rates : Dwelling-Sector Intermediate Inputs
RTGE Tax Rates : Enterprise-Sector Output
RTGENC Tax Rates : Enterprise-Sector Non-Commodity Output
RTIE Tax Rates : Enterprise-Sector Investment
RTOGDW Tax Rates : Inputs of Dwelling Sector
RTOGE Tax Rates : Other Inputs of Enterprise Sector
RTPRE Tax Rates : Labour Inputs of Enterprise Sector
RWEHZ Wage Rate : Enterprise-Sector Hourly Wage
RWEPH Wage Rate : Real Producer Hourly Wage
RWTZ Wage Rate : Average Earnings on National Accounts Basis

Table 34. TRYM World - Seasonally Adjusted (Index)

WINF World Long-Run Inflation Rate (Percent)

Table 35. TRYM Exports - Seasonally Adjusted (Chain Volume Measures)

XRBA Gold Sales by the Reserve Bank of Australia

Table 36. TRYM Ratios (Ratio)

XRBCAZ BOP Current Account Balancing Item to Nominal GDP
XRBIZ BOP Financial Account Balancing Item to Nominal GDP
XRBRFIZ Government Residual Finance Item to Nominal GDP
XRFMBZ Money Base to Nominal **GNE**
XRGDW Dwelling-Sector Output Total Rental Consumption
XRKDE Deductible to Total Enterprise-Sector Depreciation
XRNHGG General-Government Output to Employment
XROTHDW Non-Owner Occupied to Total Dwellings
XRPGDW Price of Dwelling Output to Rental Consumption
XRPIRET Price of Ownership Transfer Costs to Dwelling Investment
XRPKDE Price of Enterprise-Sector Depreciation to Investment
XRPKE Price of Enterprise-Sector Capital Stock to Investment
XRPXRBA Price of Gold to Price of Commodity Exports
XRSDR SDR Weighted Index to Trade Weighted Index
XRWEPH Trend to Actual Producer Real Hourly Wage

Table 37. TRYM Income - Seasonally Adjusted (\$ million)

GTLSZ Taxes less Subsidies on Products
TLSZ Taxes on Products and Production
YOCBZ Other Cash Benefit Payments
YTLSZ Taxes less Subsidies on Production
YUBRZ Unemployment Benefit Payments

Table 38 : TRYM Miscellaneous - Seasonally Adjusted (Ratio)

QDWI Q-Ratio : Dwelling Sector (for Investment)
QE Q-Ratio : Enterprise Sector

Table 39 : TRYM Exogenous Trends in Behavioural Equations

XTKSFM Trend in Farm Stocks-to-Sales Ratio
XTKSN Trend in Non-Farm Stocks-to-Sales Ratio
XTKV Trend in Ratio of Price of Imports-to-Non-Commodity Output
XTLG Trend in Ratio of Price of Rental-to-Non-Rental Consumption
XTLGC Trend in Ratio of Rental-to-Non-Rental Consumption
XTMGS Trend in Ratio of Imports to Weighted Demand
XTNH Trend in Average Hours Index
XTNLF Trend in Labour Force Participation Rate
XTNV Trend in Beveridge Curve
XTPCNRFTrend in Ratio of Price of Non-Rental Consumption to Supply
XTPDGMFTrend in Ratio of Price of Government Market Demand to Supply
XTPIDWFTrend in Ratio of Price of Dwelling Investment to Supply
XTPIEFTrend in Ratio of Price of Enterprise Investment to Supply
XTPMGSTrend in Ratio of Price of Imports to Index
XTPXC Trend in Ratio of Commodity Export Prices to Index
XTPXNCTrend in Ratio of Price of Non-Commodity Exports to Output
XTVMZ Trend in Ratio of Private Wealth to Assets
XTWPXC Trend in Ratio of Commodity Price Index to World Consumption Prices
XTXC Trend in Ratio of Commodity to Non-Commodity Output

Over the past two years, Treasury has undertaken an internal review of the TRYM model. This has resulted in a number of changes to the model. This document summarises these changes. Treasury will release more comprehensive documentation of the updated model at a later date.

Overview

Ever since its initial release in 1993, the **TRYM** model has been subject to a continuing process of review and modification. Documentation of the model is available on the Treasury website, <http://www.treasury.gov.au>. The main documentation is in **The Macroeconomics of the TRYM Model of the Australian Economy**, which gives an overview of the model's structure, and **Documentation of the Treasury Macroeconomic (TRYM) Model of the Australian Economy**, which gives equation-by-equation details of the model. These documents can be located on the Treasury website, either by typing the keyword '**TRYM**' in the site's search function, or by choosing Business\Economic from the menu on the home page. These two documents describe the model as it stood at the time of the 1996 TRYM conference, except for updates to reflect changes to the private-business-sector and labour-market equations outlined in **TRYM Working Paper No. 20**. Downes, P. and K. Bernie (1999), 'The Macroeconomics of Unemployment in the Treasury Macroeconomic (TRYM) Model', **TRYM Related Paper No. 20**. The version of the model currently available to the public reflects a number of additional changes. The most important of these are:

- Adjustments for the change in the National Accounts from an SNA-68 to an SNA-93 basis, including the use of chain-volume measures.
- Adjustments to tax formulas to allow for the introduction of **GST** in 2000.
- Reformulation of the dwelling-sector equations as suggested in Jovanoski, Stoney and Downes (1997). Jovanoski, S., N. Stoney and P. Downes (1997), 'Modelling the Dwelling Cycle in the Treasury Macroeconomic (TRYM) Model', **Paper presented to the 26th Annual Conference of Economists, Economic Society of Australia, Hobart, 29 September to 1 October**. This includes the introduction of a new equation for rental

vacancies.

- Changes to equations relating to the external sector of the model as a result of a review prompted by the Asian financial crisis. The changes include introducing variables for the SDR-weighted exchange rate and energy prices, specifying behavioural equations for the world price of commodity exports and the price of non-commodity exports, and introducing short-run dynamics into the exchange-rate equation.

As a result of the latest internal review, further changes are being made to the model and to data construction.

- The private-business sector and government-enterprise sector have been combined into a single 'enterprise' sector. The behavioural equations for this sector, borrowed from the previous private-business sector, have been reviewed. Changes include removing capital-augmenting productivity growth from the production function and respecifying the dynamics of the price equation.
- The representation of taxes has been reviewed. **GST** is no longer treated separately from other taxes on products and a distinction is made between the National Accounts measure of consumption of fixed capital and depreciation allowed as a deduction in the calculation of taxes on capital income.
- The default interest-rate reaction function, previously based on the growth rate of the money supply, has been replaced by a modified Taylor rule.
- The impact of the switch to chain-volume measures has been reviewed. In particular, chain-volume corrections have been introduced into the capital-accumulation equations.
- The relative-price-block equations have been reformulated - they now allow only for the impact of import prices on relative expenditure prices. The deflator for ownership-transfer costs (real-estate transfer expenses) has been dropped from the relative-price block, and the equation for the price of non-commodity exports now parallels the relative-price block equations.
- The construction of price deflators has been reviewed to distinguish more carefully between basic and market prices.
- Several new variables have been introduced for quantities that were previously represented only by formulas within equations.
- Expressions for trend corrections, residuals, interest rates and growth rates have been overhauled to ensure greater consistency across equations.

The most significant of these changes are the ones relating to the business sector, taxes and the interest-rate reaction function. They are discussed in more detail in the following section.

Discussion of Major Changes

The Private Sector Production Function

As part of the review of **TRYM**, the three private business sector production function-related equations were reviewed and substantial changes were made. The three equations are the labour demand equation, the investment equation and the non-commodity price equation.

The private business sector production function specification in TRYM (as it stood at June 2002) was problematic. The most evident problems, all largely interrelated, included an

inconsistency between the level of the model's steady-state and historical business capital stock measures, and upward trends in the business q-ratio and the capital output ratio (on a balanced-growth path these should be constant). There were also issues related to the treatment of the GST and the relationship between commodity prices and producer prices in general.

A number of these problems were directly related to issues around the measurement of the business capital stock (which has been overhauled) and the institutional framework, in which the government-enterprise sector was separated from the private-business sector. Privatisation of government enterprises has tended to increase the capital-output ratio of the private-business sector. The distinction between these two sectors has become increasingly ill-defined in recent years and data issues have become more troublesome. Moreover, the large changes in ownership have dramatically altered the nature of businesses remaining in the government enterprise sector. It therefore seemed sensible to combine the government-enterprise sector with the private business sector into what is now called the enterprise sector.

In the past the rising capital-output ratio of the private-business sector was explained in the model by negative capital efficiency growth. This was required despite the steady fall in the price of business investment relative to the price of business output. The move to an integrated enterprise sector and improvements in the measurement of the capital stock have addressed this issue.

Taxes

The TRYM review has included an examination of the treatment of taxes.

In previous versions of TRYM, taxes have been accounted for in a fashion that was economically sensible but did not attempt to mirror national accounts principles. The model now includes all the National Accounts tax values in an internally consistent manner. Indirect taxes, in particular, have undergone a complete review and are significantly different from the previous versions of TRYM.

There has also been review of direct taxes. The measures of capital income and capital taxes in the previous version of the model implied implausibly high rates of tax on capital income over history. This has been addressed by reassessing the way the National Accounts measure of gross mixed income is split between labour and capital income, and by the use of a depreciation deduction based on tax data in place of the (higher) National Accounts measure of consumption of fixed capital in determining the capital-income tax base.

Monetary Policy Reaction Function

The TRYM model contains a default monetary policy response mechanism. This is required to close the model and is not intended to represent how monetary policy is or should be conducted. Users of the model are encouraged to substitute their own monetary policy specification if they think that is appropriate.

The existing default monetary policy uses an inverted money-demand function and a money-supply growth rule. Since the mid-1990s, the fit of the model's money-demand function has steadily deteriorated, and the estimated value of the interest-rate elasticity of money demand has increased. As a result, interest rates respond to shocks with a considerable lag under the default monetary policy. For the model to converge to its steady state, however, it is important that interest rates respond in a timely manner. (This property is shared by many other models.) To correct the problem, the existing default monetary policy reaction function has been replaced by a modified Taylor rule. Under this rule, the

monetary authority sets interest rates on the basis of inflation and output targets, as in a standard Taylor rule, and also a price level target. Without the exogenous price-level target, the steady-state level of prices would be indeterminate given the pseudo-rational expectations assumption of the model.

Instead of using the modified Taylor rule, users might prefer to respecify and re-estimate the money demand function, impose a more appropriate interest-rate elasticity on the existing money demand function, use a standard Taylor rule with full rational-expectations, or substitute their own monetary-policy specification.

If you have any concerns regarding the changes, please email me at valentin.valdez@abs.gov.au.

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Table 28. TRYM Labour Market & Demography - Seasonally Adjusted ('000) (Reissue) (I-Note) - Time Series Spreadsheet

Table 28: The series NPOP (**Population : Total**) is corrupted. A corrected series is in the attached file.

TABLE 36. TRYM Ratios - Seasonally Adjusted (Ratio) (Reissue) (I-Note) - Time Series Spreadsheet

Table 36: The definition of XROCB (**Non Unemployment Pensions Rate to PCON**) has been changed slightly. In the past it was the ratio of government cash benefits other than unemployment benefits to the product of population (NPOP) and the consumption deflator (PCON). Now this ratio is adjusted for productivity growth. The strange behaviour in this series around 1971 is caused by the error in NPOP (**Population : Total**). A corrected series is in the attached file.

03/03/2006

Table 1364036 is re issued due to incorrect data on the following series:

SDR Weighted Index to Trade Weighted Index
Public Sector Farm to Total Farm Stock Building
Tax on Capital Income to Tax on Labour Income
Income transfers : Unemployment Benefit Rate
Government Debt to GDP
Trend to Actual Producer Real Hourly Wage
Government Wages to Business Wages
Official Current Transfer Debits to GDP
Current Transfer Credits & Compensation of Employees to World Output
Other Current Transfer Debits & Compensation of Employees to GDP
Migrant Credits to World Output

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